Ser. No. 09/817,320

REMARKS

Claims 1, 12 and 13 are amended to correct formality errors and to more clearly define the invention. No new issues are raised in these amendments.

Support for the amendments is found in the existing claims and in the Application description in connection with Figure 2 on pages 10-13 and other places.

I. Objection to claims 1 and 13.

Claims 1 and 13 are objected as having a surplus comma in the phrase "incorporating, said encrypted address portion".

Claim 1 and 13 are amended to delete the surplus comma in accordance with the Examiner's suggestion. Consequently this ground of objection is no longer deemed to apply and its withdrawal is respectfully requested.

II. Rejection of claim 12 under 35 USC 112.

Claim 12 is rejected under 35 USC 112 second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter. Specifically, claim 12 is rejected for reciting "said link processor encrypts said address portion of said URL using an RSA (Rivest Shamir Adleman) MD5 compatible algorithm" and the RSA MD5 function is a hashing function not an encryption function.

Claim 12 is amended to recite the "said link processor encodes said address portion of said URL using an RSA (Rivest Shamir Adleman) MD5 compatible hashing function". Therefore, claim 12 unambiguously recites the RSA MD5 function is used to perform hashing. Consequently this ground of rejection is no longer deemed to apply and its withdrawal is respectfully requested.

III. Rejection under 35 U.S.C. 102(b)

Claims 1-13, 5, 7-13 and 15-22 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,708,780 – Levergood et al. These claims, as amended, are deemed to be patentable for the reasons given below.

-7-

Ser. No. 09/817,320

Amended claim 1 recites a system "employed by an application for encoding URL link data for use in detecting unauthorized URL modification" comprising "a link processor for processing URL data by identifying an address portion of said URL, encrypting said address portion of said URL, incorporating said encrypted address portion of said URL, together with said address portion of said URL in non-encrypted form, into a single processed URL data string and providing a key supporting decryption of said encrypted address portion to a destination system; and a communication processor for incorporating said processed URL data string into formatted data for communication to said destination system". These features are not shown (or suggested) in Levergood.

The system of claim 1 involves "encrypting said address portion of said URL, incorporating, said encrypted address portion of said URL, together with said address portion of said URL in non-encrypted form, into a single processed URL data string". As well as "providing a key supporting decryption of said encrypted address portion, to a destination system", for use in decrypting the "encrypted address portion" by the "destination system". These features address the security deficiencies of URL processing functions of electronic systems. "Applications are vulnerable to the corruption of URL data and the context information conveyed within the URL data. The URL data conveyed from application 200 to application 230 includes context information comprising a session identifier and optionally a user or patient identifier. This URL data is potentially vulnerable to corruption to cause URL replay or redirection of an application to a substitute address or to gain access to application functions and parameters for unauthorized purposes. In order to protect against such corruption and to ensure that the entity being accessed is the one originally targeted, portions of the URL data conveyed between applications are advantageously encrypted" (Application page 11 lines 1-9).

The claimed system addresses the security problem by ensuring "that a URL link (e.g. a URL link to child application 230) embedded in a web page provided for display using browser 10 is not redirected. For this purpose, application 200 generates a hash value from the domain, path, program, and program data portion of the URL. Application 200 (as the sending application) generates a hash value from the fully qualified URL link" (Application page 9 lines 32-37). "Application 230 decrypts the received hash value for comparison with a corresponding hash value independently generated from corresponding URL data retrieved from a web server".

-8-

Ser. No. 09/817,320

Specifically, the "independently generated hash value and the hash value received by application 230 from application 200 via browser 10 are compared and if they are not equal, the request to initiate application 230 is rejected" (Application page 10 lines 25-37).

Levergood does not show or suggest "encrypting said address portion of said URL incorporating, said encrypted address portion of said URL, together with said address portion of said URL in non-encrypted form, into a single processed URL data string" for decryption by a "destination system" using the provided "key supporting decryption of said encrypted address portion". Levergood does not show or suggest "providing a key supporting decryption of said encrypted address portion, to a destination system", for use in decrypting the "encrypted address portion" by the "destination system". In an exemplary embodiment of the invention illustrated in the Application specification pages 11-13, application 200 advantageously, for example, encrypts "a URL link address portion" comprising a hash value identified by field identifier GSH= derived by "hashing on the addressable portion of a fully qualified URL" comprising the "URL data either lying between the "http://" and the question mark "?" or from the data lying between the "http://" and the pound/number sign "#" - whichever comes first" (Application page 10 lines 1-2 and page 11 line 25-27). Consequently, in the exemplary URL string shown processed in the specification page 12

    www.smed.com/altoona/prd/results.exe/1?GSM=16253384937&GSH=24017
    &Pid=1772693&Frgclr=blue

the compressed address portion is 24017 which is concatenated with a patient identifier (Application page 12 line lines 17-21) as shown:

    GSH=24017&Pid=1772693

and is encrypted into the string

    16sfdjwhejeyw7rh3hekw

to produce the processed URL including the encrypted URL address portion:

    www.smed.com/altoona/prd/results.exe/1?GSM=16253384937:16sfdjwhejey

-9-

Scr. No. 09/817,320
w7rh3hekw&Frgclr=blue.

This is an exemplary "processed URL". The Rejection makes a **fundamental error** on page 3 in interpreting the Levergood reference. Contrary to the Rejection statements on page 3, Levergood in column 5 lines 61-65 and column 3 lines 34-37 relied on in the Rejection merely discloses encryption of a session identifier (SID) and an IP address. Specifically, Levergood states "the digital signature is a cryptographic hash of the remaining items in the SID and the authorized IP address which are encrypted with a secret key which is shared by the authentication and content servers"- Levergood column 5 lines 61-65, also see column 3 lines 33-37).

Further, although in Levergood a valid session identifier "typically comprises" an "accessible domain" in the "SID encrypted with a secret key", the Levergood accessible domain is NOT a URL or an address portion of a URL (Levergood column 3 lines 33-37). Levergood explicitly defines an accessible "domain" as a collection of files and NOT a URL or address portion of a URL ("A protection domain is **defined** by the service provider and is a **collection of controlled files** of common protection within one or more servers" – Levergood column 3 lines 52-55). This is further made clear in column 5 lines 54-61 stating a "preferred SID is a sixteen character ASCII string that encodes 96 bits of SID data" that contains "an 8-bit **domain** comprising a **set of information files** to which the current SID authorizes access". Such an "accessible domain" as used by Levergood is not in a URL link address portion. This is further corroborated in Levergood in column 6 lines 29-34 indicating that a domain is in the non-address, URL data field portion of a URL (e.g. after the question mark), specifically, a "REDIRECT URL might be: "http://auth.com/authenticate?**domain**= [domain]& URL = http://content.com/report".

Levergood does not show or suggest "encrypting said address **portion** of said URL. Neither a session identifier nor an IP address as used in Levergood are a "URL or a URL address portion". Indeed a URL and IP address are distinct and different objects with totally different functions ("the content server records the URL **and** the IP address" – Levergood column 5 lines 37-38). An IP address describes an electronic address of an Internet entity whereas a URL "consists of three parts: the transfer format, the host name of the machine that holds the file, and the **path** to the file" (Levergood column 2 lines 28-31). A session identifier identifies a user session of computer operation for example and is itself a distinct entity that may be conveyed within a field of a URL (Application page 11 line 22).

-10-

Ser. No. 09/817,320

Levergood also does not show or suggest the claim 1 feature combination involving "incorporating, said encrypted address portion of said URL, together with said address portion of said URL in **non-encrypted form**, into a single processed URL data string" for decryption by a "destination system" using the provided "key supporting decryption of said encrypted address portion". Contrary to the Rejection statement on page 4 and as explained previously, the SID of Levergood does NOT contain an "encrypted address portion" of a URL. Further, the purpose of the Levergood encryption is to ensure validity of session identifiers (SIDs) by using an "Internet server" to subject "the client to an authorization routine prior to issuing the SID" (Levergood column 3 lines 24-26). In contrast, the Application addresses the problem of preventing "URL replay or redirection" through its recognition that URLs are "vulnerable to corruption" (Application page 11 lines 1-9). Consequently there is no reason, problem recognition or motivation for amending the Levergood system to include the claimed arrangement. Consequently, withdrawal of the rejection of claim 1 under 35 USC 102(b) is respectfully requested.

Dependent claim 2 is considered to be patentable based on its dependence on claim 1. Claim 2 is also considered to be patentable because Levergood does not show (or suggest) a "link processor" that "adaptively identifies said address portion as URL data either, (a) lying between "http://" and a question mark "?" or (b) lying between "http://" and a pound/number sign "#", in response to whichever of condition (a) and (b) is satisfied first". Contrary to the Rejection statement on page 4 and as explained in connection with claim 1, Levergood in column 3 line 56 to column 4 line 18 does not provide any description of adaptively identifying an "address portion" of a URL based on "whichever" of a "condition (a) and (b) is satisfied first". Specifically, adaptively identifying an "address portion" as URL data either, (a) lying between "http://" and a question mark "?" or (b) lying between "http://" and a pound/number sign "#", in response to whichever of condition (a) and (b) is satisfied first". Levergood also shows no recognition of the problem this feature addresses.

Dependent claim 3 is considered to be patentable based on its dependence on claim 1. Claim 3 is also considered to be patentable because Levergood does not show (or suggest) "adaptively" identifying the "address portion based on the application associated with said URL". Contrary to the Rejection statement on page 4, Levergood in column 3 line 56 to column 4 line 18 does not provide any 35 USC 112 compliant enabling description of such a feature.

-11-

Ser. No. 09/817,320

Dependent claim 5 is considered to be patentable based on its dependence on claim 1 and for reasons given in connection with claim 1.

Dependent claim 7 is considered to be patentable based on its dependence on claim 1 and for reasons given in connection with claim 1.

Dependent claim 8 is considered to be patentable based on its dependence on claim 1.

Dependent claim 9 is considered to be patentable based on its dependence on claims 1 and 8 for reasons given in connection with these claims. Claim 9 is also considered to be patentable because Levergood does not show (or suggest) a "link processor" that "incorporates said session identifier into said processed URL data string by formatting said session identifier into a data field including said session identifier and encrypted address separated by a colon (that is, session identifier:encrypted address)". Levergood does NOT show or suggest such features in column 3 lines 12-16 or elsewhere.

Dependent claim 10 is considered to be patentable based on its dependence on claim 1. Claim 10 is also considered to be patentable because Levergood does not show (or suggest) a "link processor" that "concatenates said address portion of said URL together with data associated with a personal record to form a data element, and encrypts said data element for incorporation into said single processed URL data string". The Levergood system in column 3 lines 34-37 or elsewhere does not show selection of a URL address portion at all and does not show or suggest a "link processor" that "concatenates said address portion of said URL together with data associated with a personal record to form a data element. Levergood also does not show or suggest encryption of "said data element for incorporation into said single processed URL data string".

Dependent claim 11 is considered to be patentable based on its dependence on claims 1 and 10.

Dependent claim 12 is considered to be patentable based on its dependence on claim 1.

-12-

Scr. No. 09/817,320

Amended independent claim 13 recites a "system employed by an application for encoding URL link data for use in detecting unauthorized URL modification" comprising "a link processor for processing URL data by identifying an address portion of said URL, encrypting said address portion of said URL, incorporating said encrypted address portion of said URL, together with said address portion of said URL in non-encrypted form and a session identifier identifying a user session of computer operation, into a single processed URL data string; and a communication processor for incorporating said processed URL data string into formatted data for communication to a request device".

Amended claim 13 is considered to be patentable for the reasons given in connection with claims 1 and 8. Claim 13 is also considered to be patentable because Levergood in column 3 lines 12-16, 34-37 column 5 lines 52-65, column 4 and column 7 or elsewhere does not show (or suggest) a feature combination including "a link processor for processing URL data" by "encrypting said address portion of said URL, incorporating, said encrypted address portion of said URL, together with said address portion of said URL in non-encrypted form and a session identifier identifying a user session of computer operation, into a single processed URL data string". Levergood does not show (or suggest) such features for the reasons given in connection with the previous claims.

Independent claim 15 recites a "system employed by an application for decoding URL link data encoded for use in detecting unauthorized URL modification" comprising "an input processor for receiving an encoded URL; a link processor for processing said encoded URL by identifying an encrypted address portion of said received encoded URL and a corresponding non-encrypted address portion of said received encoded URL, decrypting said encrypted address portion of said URL to provide a decrypted URL address portion, a validation processor for determining if said decrypted URL address portion has been subject to unauthorized modification by determining if said decrypted URL address portion is different to said corresponding non-encrypted address portion of said received encoded URL".

Amended claim 15 is considered to be patentable for the reasons given in connection with claim 1. Claim 15 is also considered to be patentable because Levergood does not show (or suggest) a feature combination that detects "unauthorized URL modification" by "decrypting said encrypted address portion of said URL to provide a decrypted URL address portion" and "determining if said decrypted URL address portion has been subject to unauthorized modification by

-13-

Ser. No. 09/817,320

determining if said decrypted URL address portion is different to said corresponding non-encrypted address portion of said received encoded URL". The Levergood digital signature comparison relied on in column 6 lines 5-16 is to ensure validity of session identifiers (SIDs) by using an "Internet server" to subject "the client to an authorization routine prior to issuing the SID" (Levergood column 3 lines 24-26). In contrast, the Application addresses the problem of preventing "URL replay or redirection" through its recognition that URLs are "vulnerable to corruption" (Application page 11 lines 1-9). Consequently there is no reason, problem recognition or motivation for amending the Levergood system to include the claimed arrangement. Consequently, Levergood does not show or suggest "decrypting said encrypted address portion of said URL to provide a decrypted URL address portion". Further, Levergood does not show or suggest (and is incapable of) "determining if said decrypted URL address portion has been subject to unauthorized modification by determining if said decrypted URL address portion is different to said corresponding non-encrypted address portion of said received encoded URL".

Dependent claim 16 is considered to be patentable based on its dependence on claim 15. Claim 16 is also considered to be patentable because Levergood in column 6 lines 5-16 does not show (or suggest) a system in which "said decrypted URL address portion is a first hash value, and said validation processor, applies a hashing function to said corresponding non-encrypted address portion of said received encoded URL to provide a comparison second hash value, and compares said comparison second hash value with said first hash value, and upon a match determines a successful validation of said received encoded URL" indicating no "unauthorized URL modification". Levergood does not suggest such a feature combination or contemplate comparing hash values representing URL address portions. Levergood does not contemplate or provide a system for determining "unauthorized URL modification".

Dependent claim 17 is considered to be patentable based on its dependence on claim 15.

Dependent claim 18 is considered to be patentable based on its dependence on claim 15 for reasons given in connection with claims 1, 8, 10 and 11.

Dependent claim 19 is considered to be patentable based on its dependence on claims 15 and 18 for reasons given in connection with claims 1, 8, 10 and 11.

-14-

Ser. No. 09/817,320

Amended independent claim 20 is a method claim mirroring apparatus claim 1 and is considered to be patentable for the same reasons.

Amended independent claim 21 is a method claim mirroring apparatus claim 15 and is considered to be patentable for the same reasons.

Amended dependent claim 22 is considered to be patentable based on its dependence on claim 21. Claim 22 is also considered to be patentable because of reasons given in connection with claims 15 and 16. Consequently, withdrawal of the rejection of claims 1-13, 5, 7-13 and 15-22 under 35 USC 102(b) is respectfully requested.

IV. Rejection under 35 U.S.C. 103(a)

Claims 4, 6 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,708,780 – Levergood. These claims are deemed to be patentable for the reasons given below.

Dependent claim 4 is considered to be patentable based on its dependence on claims 1 and 3. Claim 4 is also considered to be patentable because Levergood does not show (or suggest) a "link processor" that "adaptively uses (a) an address portion for ASP (Active Server Page) applications comprising a SERVER_NAME and SCRIPT_NAME and (b) an address portion for a non-ASP applications comprising a SERVER_NAME, SCRIPT_NAME, and PATH_INFO". As recognized in the Rejection on page 7, Levergood does not disclose the use of Active Server Page applications. However, the Rejection takes Official Notice that "use of Active Server Page applications" is well known and would have been obvious to use in the claim 4 arrangement (Rejection page 7 lines 7-11). It is acceptable for official notice to be taken of a fact of "wide notoriety", In re Howard, 394 F. 2d 869, 157 USPQ 615, 616 (CCPA 1968) e.g. a fact commonly known to laymen everywhere, 29 AM. Jur 2D Evidence S. 33 (1994) or of a fact that is capable of "instant and unquestionable demonstration", In re Ahlert 424 F. 2d 1088, 1091, 165 USPQ 418, 420 (CCPA 1970). However, official notice should not be taken of a fact normally subject to the possibility of rational disagreement among reasonable men, In re Eynde, 480 F. 2d 1364, 1370; 178 USPQ 470, 474 (CCPA 1973). It is submitted that the elements of which the Rejection takes official notice, in the context of their respective claims, are neither features of "wide notoriety", (In

-15-

Ser. No. 09/817,320

re Howard), nor capable of "instant and unquestionable demonstration" (In re Ahlert). On the contrary, these features are subject to the possibility of rational disagreement given the claim arrangements within which they reside. Consequently, Applicants take exception to this instance of Official notice used in the Rejection. Further, the Applicant requests that a showing be made of evidence that these features were well known, in the context of their respective claims at the time the invention was made. It is submitted that on the contrary, Levergood fails to recognize any need for adaptive URL generation responsive to whether an Active Server Page is involved or not. Levergood does not mention use of Active Server Pages at all. Consequently, withdrawal of the rejection of claim 4 under 35 USC 103(a) is respectfully requested.

Dependent claim 6 is considered to be patentable based on its dependence on claim 1. Claim 6 is also considered to be patentable because Levergood does not show (or suggest) a "link processor" that "converts said address portion of said URL to lower case before compression". Contrary to the Rejection statement on page 7, Levergood does not provide any 35 USC 112 compliant enabling description of such a feature. Levergood fails to recognize any need for case sensitive conversion. Levergood does not mention lower case or upper case at all.

Dependent claim 14 is considered to be patentable based on its dependence on claim 13. Claim 14 is also considered to be patentable because Levergood does not show (or suggest) a "link processor" that "compresses said identified address portion and encrypts said compressed address portion of said URL to provide said encrypted address portion and said link processor converts said identified address portion to lower case prior to compressing said identified address portion using a hash function". However, the Rejection takes Official Notice that "URLs are case sensitive", that a "hash function" is sensitive to uppercase and lower case characters and that as a result "forcing all characters" to lower case in the context of the claimed arrangement of claim 14 would have been obvious (Rejection page 8 lines 1-6). It is acceptable for official notice to be taken of a fact of "wide notoriety", In re Howard, 394 F. 2d 869, 157 USPQ 615, 616 (CCPA 1968) e.g. a fact commonly known to laymen everywhere, 29 AM. Jur 2D Evidence S. 33 (1994) or of a fact that is capable of "instant and unquestionable demonstration", In re Ahlert 424 F. 2d 1088, 1091, 165 USPQ 418, 420 (CCPA 1970). However, official notice should not be taken of a fact normally subject to the possibility of rational disagreement among reasonable men, In re Eynde, 480 F. 2d 1364, 1370; 178 USPQ 470, 474 (CCPA 1973). It is submitted that the elements of which the Rejection takes official notice, in

-16-

Ser. No. 09/817.320

the context of their respective claims, are neither features of "wide notoriety", (In re Howard), nor capable of "instant and unquestionable demonstration" (In re Ahlert). On the contrary, these features are subject to the possibility of rational disagreement given the claim arrangements within which they reside. Consequently, Applicants take exception to this instance of Official notice used in the Rejection. Further, the Applicant requests that a showing be made of evidence that these features were well known, in the context of their respective claims at the time the invention was made. It is submitted that on the contrary, Levergood fails show or suggest a "link processor" that "compresses said identified address portion and encrypts said compressed address portion of said URL to provide said encrypted address portion and said link processor converts said identified address portion to **lower case** prior to compressing said identified address portion using a hash function". Levergood also does not suggest such a feature combination for reasons given in connection with claims 1 and 6. Consequently, withdrawal of the rejection of claim 14 under 35 USC 103(a) is respectfully requested.

In view of the above amendments and remarks, Applicants submit that the Application is in condition for allowance, and favorable reconsideration is requested.

Respectfully submitted,

Date: June 22, 2005

Alexander J. Burke
Reg. No. 40,425

Siemens Corporation,
Customer No. 28524
Tel. 732 321 3023
Fax 732 321 3030

-17-